REMARKS

Claims 1-54 have been canceled, and claims 55-84 have been added. In the final Office Action mailed August 13, 2003, the Examiner rejected claims 1-6, 9-44 and 46-54 under 103(a) as being unpatentable over U.S. Patent No. 6,317,686 ("Ran"). The Examiner rejected claims 7, 8, 29-42 and 45 under 35 U.S.C. 103(a) as being unpatentable over Ran in view of U.S. Patent No. 5,911,775 ("Tanimoto"). These rejections are moot in view of the cancellation of claims 1-54 and the addition of claims 55-84.

Claims 55-84 are directed toward various methods for tracking a moving object. For example, claim 55 includes the elements of obtaining a sequence of expected locations for the moving object, computing a temporal-spatial path along which the moving object travels, and also constructing a trajectory that encompasses all possible temporal-spatial paths along which the moving object may travel from a starting point through intermediate points to a destination point within a range of spatial and temporal uncertainties. Thus, the temporal-spatial path might represent one path for the moving object to take between the starting and destination points. In traveling between the starting and destination points, however, the moving object might deviate from that one temporal-spatial path.

The deviation might be a temporal deviation (e.g., it remains on path but travels too fast or slow), a spatial deviation (e.g., it moves off the path) or both a temporal and spatial deviation. Thus, the moving object might actually travel over one of a variety of different temporal-spatial paths. The trajectory then might define permissible temporal and spatial uncertainties in that path actually taken by the moving object. Thus, an actual location of the moving object can then be analyzed to determine whether it falls within that range of temporal and spatial uncertainties set forth by the trajectory, as is claimed in claim 57.

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Independent claims 61, 66, 70, 75 and 79 include similar elements, including their own respective trajectory elements. A trajectory may be created in a variety of different ways. For example, claim 61 sets forth that the trajectory may be created by projecting a multi-dimensional sphere along an uncertainty bound reduction of the temporal-spatial path. That is, the multi-dimensional sphere can represent a given temporal and spatial uncertainty. The trajectory can then be created by projecting that one uncertainty represented by the sphere along an uncertainty bound reduction of the temporal-spatial path. Thus, the sphere is not necessarily projected exactly along the temporal-spatial path but rather a particular reduction of that path.

Applicants submit that newly added claims 55-84 are patentable over the previously cited references. Specifically, neither Ran nor Tanimoto, either alone or in combination, teach or suggest all elements of Applicant's newly added claims 55-84. Ran is directed toward a method of providing travel times along route segments. As described in Ran, information (e.g., vehicle type, driver specific disposition, weather, etc...) can be inputted into an equation that is then used to predict travel time over a particular route segment. (Ran Abstract). Ran does not teach or suggest constructing a trajectory, such as one that encompasses all possible temporal paths along which the moving object may travel within a range of temporal and spatial uncertainties. Ran does not teach or suggest defining permissible temporal and spatial uncertainties in an actual location of a moving object relative to expected locations of the moving object along a temporal-spatial path.

Tanimoto does not make up for the deficiencies of Ran. Tanimoto is directed toward determining a route used to return a vehicle to an original guided route. (Abstract). If a vehicle deviates from its original guided route, another route can be determined for the vehicle to follow in order to return to the original guided route. The original guided route the vehicle follows in

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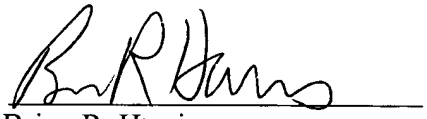
Tanimoto is a strictly a physical route; it has no temporal component. That is, the original guided route does not have a time component specifying how fast or slow the vehicle should travel along that route. In monitoring the vehicle, Tanimoto is only concerned with whether the vehicle is on that physical route. Thus, Tanimoto does not specify any permissible temporal deviations and does not monitor for any temporal deviations -- either along the original guided path or along another path taken by the vehicle. In contrast, Applicant's newly added claims 55-84 set forth various temporal and spatial ranges in the travel of a moving object.

In light of the above remarks, the Applicant submits that newly added claims 55-84 are in condition for allowance. The Examiner is requested to contact the Applicant's attorney, Brian Harris, at his direct dial number (312-913-3303) if any questions arise or he may be of assistance to the Examiner.

Respectfully submitted,

Date: 2/13/04

By: 

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